

CLAIMS

1. A method for switching data in a circuit switched  
synchronous time division multiplexed network from a  
5 first bitstream, being received at a first port of a  
switch, to a second and a third bitstream, being trans-  
mitted from a second and a third port, respectively, of  
said switch, said method comprising the steps of:

associating data read from a time slot position of  
10 said first bitstream at said first port with a channel  
identifier that identifies a channel that said time slot  
position forms part of; and

using said channel identifier at said second port  
for mapping said data into a time slot position of said  
15 second bitstream and at said third port for mapping said  
data into a time slot position of said third bitstream.

2. A method as claimed in claim 1, wherein said  
associating step comprises tagging said data with a chan-  
20 nel identifying header containing said channel  
identifier.

3. A method as claimed in claim 2, wherein said data  
is concatenated with said channel identifying header.

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SUBA17 ~~4. A method as claimed in claim 1, 2, or 3, wherein  
said data and said channel identifier are transferred  
within said switch using a switch internal bitstream.~~

30 5. A method as claimed in claim 1, wherein said data  
is transferred from said first port to said second port  
and said third port in a time slot of a switch internal  
bitstream, and wherein said associating step comprises  
associating said channel identifier with information  
35 designating the time slot position, of said internal  
bitstream, in which said data is transferred, thereby  
associating said data with said channel identifier.

6. A method as claimed in claim 1, wherein said data is temporarily stored in a memory in said switch, and wherein said associating step comprises associating said channel identifier with information designating the memory position, of said memory, in which said data is temporarily stored, thereby associating said data with said channel identifier.

SUBA2 10 ~~7. A method as claimed in any one of the preceding claims, wherein said channel identifier is used at said second and third port for mapping said data into the next available time slot position, of the respective bitstream, that forms part of the channel that is identified by said channel identifier.~~

15 SUBA3 ~~8. A method as claimed in any one of the preceding claims, wherein data received from time slot positions that define said channel on said first bitstream at said first port is transmitted in said second and third bitstream in maintained mutual order.~~

SUBA4 25 ~~9. A method as claimed in any of the preceding claims, wherein said step of using said channel identifier at said second port for mapping said data into a time slot position of said second bitstream into a time slot position of said third bitstream comprises:~~

30       addressing an entry in a channel-to-slot table using said channel identifier as an address;

      reading information designating a time slot position in the respective bitstream from said entry in said channel-to-slot table;

      addressing an entry in a slot-to-next slot table using said information designating a time slot position;

35       reading, from said entry in said slot-to-next slot table, information as to the position of the next time

SUB A4 7 slot that forms part of the channel identified by said channel identifier on the respective bitstream; and  
writing said information as to the position of the next time slot into said channel-to-slot table at said  
5 entry in said channel-to-slot table, to be used at the next addressing thereof.

10 A method as claimed in claim 9, comprising the step of writing said data into the time slot position  
10 read that is designated by the information that is read from said channel-to-slot table.

11 A method as claimed in claim 9, comprising the step of writing said data into said next time slot  
15 position read from said slot-to-next-slot table.

12 A method as claimed in any one of claims 1-8, wherein said step of using said channel identifier at said second port for mapping said data into a time slot  
20 position of said second bitstream into a time slot position of said third bitstream comprises:

selecting a channel specific FIFO buffer based upon said channel identifier;

storing said data in the selected channel specific  
25 FIFO buffer; and

writing data stored in said channel specific FIFO buffer into time slot positions defining said channel on the respective bitstream.

SUB A6 39 ~~13. A method as claimed in any one of the preceding claims, wherein channel management is provided by the dynamic allocation and deallocation of time slots to/from in accordance with changing user capacity requirements.~~

SUB A7 35 ~~14. A method as claimed in any one of the preceding claims, wherein said channel is defined by two or more~~

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~~time slot positions within each frame of at least one of said bitstream.~~

15. An apparatus for switching data in a circuit  
5 switched synchronous time division multiplexed network from a first bitstream to a second and a third bitstream, comprising:

10 a first (225; 325; 425; 525), second (230; 330; 430; 530), and third (321; 331; 431; 531) port for accessing said first, second, and third bitstream, respectively;  
associating means (240; 340; 440; 54) for associating data read from a time slot position of said first bitstream at said first port with a channel identifier that identifies a channel that said time slot position  
15 forms part of; and  
mapping means (250; 350; 450; 550, 551; 650; 750) for using said channel identifier at said second port for mapping said data into a time slot position of said second bitstream and at said third port for mapping said  
20 data into a time slot position of said third bitstream.

16. An apparatus as claimed in claim 15, wherein said associating means comprise means (442) for tagging connecting said data with a channel identifying header  
25 containing said channel identifier.

17. An apparatus as claimed in claim 16, wherein said associating means are arranged to concatenate said data with said channel identifying header.

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~~18. An apparatus as claimed in claim 16 or 17, comprising a bitstream for transferring said data and said channel identifier between said ports~~

35 19. An apparatus as claimed in claim 15, comprising a medium (370; 570) for transferring said data between said ports in time slots of an internal bitstream carried

by said medium, wherein said associating means is arranged to associate said channel identifier with information designating the time slot position, of said internal bitstream, in which said data is transferred, thereby  
5 associating said data with said channel identifier.

20. An apparatus as claimed in claim 15, comprising a memory for temporarily storing said data, wherein said associating means are arranged to associate said channel  
10 identifier with information designating the memory position, of said memory, in which said data is temporarily stored, thereby associating said data with said channel identifier.

15 21. An apparatus as claimed in any one of claims 15-20, wherein said mapping means are arranged to use said channel identifier at said second and third port for mapping said data into the next available time slot position, of the respective bitstream, that forms part of  
20 the channel that is identified by said channel identifier.

22. An apparatus as claimed in any one of claims 15-21, wherein said mapping means are arranged to transmit  
25 data received from time slot positions that define said channel on said first bitstream in said second and third bitstream in maintained mutual order.

23. An apparatus as claimed in any one of claims 15-30 22, wherein said mapping means comprises, for each one of said second port and said and third port:

a channel-to-slot table (640) having entries which are addressable using the channel identifier as address and which provide information, at the respective entry,  
35 as to a respective time slot position of the respective bitstream; and

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a slot-to-next slot table (660) having entries which are addressable using said information as to a time slot position of the respective bitstream and which provides information, at each respective entry, as to the position of the next time slot that forms part of the channel identified by said channel identifier on the respective bitstream.

24. An apparatus as claimed in claim 23, wherein said mapping means further comprises means for addressing an entry in said channel-to-slot table using said channel identifier as an address, for reading information designating a time slot position from said entry in said channel-to-slot table, for addressing an entry in said slot-to-next slot table using said information designating a time slot position as an address, for reading, from said entry in said slot-to-next slot table, information as to the position of a next time slot, and for writing write said information as to the position of the next time slot into said channel-to-slot table at said entry in said channel-to-slot table to be used at the next addressing thereof.

25. An apparatus as claimed in claim 24, wherein said mapping means are arranged to map said data into the time slot position, of the respective bitstream, that is designated by the information that is read from said channel-to-slot table.

26. An apparatus as claimed in claim 24, wherein said mapping means are arranged to map said data into the next time slot position, of the respective bitstream, that is designated by the information that is read from said slot-to-next-slot table.

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27. An apparatus as claimed in any one of claims 15-23, wherein said mapping means comprises, for each one of said second port and said and third port:

5 a set of channel specific FIFO buffers (780), each FIFO buffer corresponding to a respective channel and each FIFO buffer temporarily storing data associated therewith;

10 FIFO buffer selection means (770) for selecting which FIFO buffer to store said data in based upon said channel identifier; and

a slot-to-channel mapping table (790) for mapping data from said set of FIFO buffers into the respective bitstream.

15 28. An apparatus as claimed in any one of claims 15-26, wherein channel management is provided by dynamic allocation and deallocation of time slots to/from in accordance with changing user capacity requirements.

20 29. An apparatus as claimed in any one of claims 15-27, wherein said channel is defined by two or more time slot positions within each frame of at least one or said bitstreams.